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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/267,781	03/15/1999	DENNY M. LIN	36J.P191	7568

5514 7590 02/25/2005

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EXAMINER

WHIPKEY, JASON T

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/267,781	Applicant(s) LIN, DENNY M.	
	Examiner Jason T. Whipkey	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-5 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 26, 2004, has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 2-5 and 7-10 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 2-4 and 7-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McCubrey (U.S. Patent No. 4,484,349) in view of Tromborg (U.S. Patent No. 4,665,440), Doran (U.S. Patent No. 6,212,303), and Tandon (U.S. Patent No. 5,153,421).

Regarding claims 2 and 7, McCubrey discloses an image processing system that may obtain an image matrix from a television camera (column 3, line 68, through column 4, line 2). The image is divided into three sections for processing by pipelines 12, 14, and 16, which are shown in Figure 1 (column 3, lines 64-67). Boundary image data may be duplicated by transferring pixels between stages 18, 24, and 30 via connections 60 and 62 (column 4, lines 51-67). McCubrey teaches that stages 18-32 are processors (column 3, lines 37-42). Stages 18-32 are arranged in pipelines 12, 14, and 16, as shown in Figure 1.

McCubrey is silent with regard to the type of sensor array used in the television camera.

Tromborg discloses a monolithic one- or two-dimensional image sensor (column 3, lines 5-10). As shown in Figure 2, the transfer shift register is divided into multiple segments 141 to 14n, which provide parallel outputs. As stated in column 3, lines 61-62, "Each of these outputs may then be supplied to a separate processor."

As stated in column 4, lines 48-54, the advantage to supplying parallel outputs from the imaging array is that multiple low cost, low performance processors may be used in place of a single high cost, high performance processor. For this reason, it would have been obvious at the time of invention to have McCubrey's image processing system obtain image data from a camera using Tromborg's image sensor.

Both McCubrey and Tromborg are silent with regard to duplicating data for overlap regions.

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Doran discloses a system used to process images at a high speed. As shown in Figure 3, splitter 32 receives scan line pixel data 30 from scanner 18 and divides them into channels 30-1 through 30-4 (column 8, lines 52-60). Overlap data T and B are added to the beginning and end of each channel's image data, wherein the overlap data come from adjacent channels (column 8, line 61, through column 9, line 14). Therefore, overlap data B from channel 30-1-1 and T from channel 30-2-1 are available to channels 30-1-1 and 30-2-1. Each channel is then processed in pipeline form, as shown in Figure 1.

As stated in column 10, lines 12-18, the advantage to duplicating image data for use in multiple pipelines is that the formation of "seams" between image segments can be prevented. For this reason, it would have been obvious at the time of invention to have McCubbrey's image processing system include pixel-duplicating means.

McCubbrey, Tromborg, and Doran are all silent with regard to placing the output pipelines and the duplicating means on the image sensor.

Tandon discloses an architecture for an image sensor array. As shown in Figure 1, the processing circuitry for the image signals is located on the same chip as the sensor itself. As stated in column 1, lines 10-27, advantages of placing supporting circuitry on the same chip as an image sensor include reduced costs and reduced complexity of assembly. For these reasons, it would have been obvious at the time of invention to have the systems described by McCubbrey, Tromborg, and Doran place all supporting circuitry on the chip with the image sensor.

Claims 3 and 8 may be rejected using the rationale used for claims 2 and 7. Additionally, McCubbrey teaches that stages 18-32 are processors (column 3, lines 37-42) that are arranged in pipelines 12, 14, and 16, as shown in Figure 1.

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Doran also teaches that all data — including the duplicate overlap data — are stored in memory unit 32-A or 32-B until all data are received, at which point the data are transferred to the processing pipelines (column 33, lines 21-33).

Regarding claims 4 and 9, Doran teaches that scanner 18 may be a conventional charge-coupled device (column 6, lines 20-21). Doran is silent with regard to whether buffer memories 32-A and 32-B are located on the same chip as scanner 18.

Official Notice is taken that image pickup devices are often placed on chips separate from their associated processing circuitry. An advantage to doing so is that a custom image pickup chip is not necessary for each application, thus reducing design costs. For this reason, it would have been obvious at the time of invention to have Doran place buffer memories 32-A and 32-B on a chip separate from scanner 18.

5. Claims 5 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McCubbrey in view of Tromborg and Tandon.

Regarding both claims, McCubbrey discloses an image processing system that may obtain an image matrix from a television camera (column 3, line 68, through column 4, line 2). The image is divided into three sections for processing by pipelines 12, 14, and 16, which are shown in Figure 1 (column 3, lines 64-67). Boundary image data may be duplicated by transferring pixels between stages 18, 24, and 30 via connections 60 and 62 (column 4, lines 51-67). McCubbrey teaches that stages 18-32 are processors (column 3, lines 37-42). Stages 18-32 are arranged in pipelines 12, 14, and 16, as shown in Figure 1. As shown in Figure 3, pixel

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overlapping occurs among pipelines, with pixels 4, 5, 8, and 9 transferred between stages, for example.

McCubrey is silent with regard to the type of sensor array used in the television camera.

Tromborg discloses a monolithic one- or two-dimensional image sensor (column 3, lines 5-10). As shown in Figure 2, the transfer shift register is divided into multiple segments 141 to 14n, which provide parallel outputs. As stated in column 3, lines 61-62, "Each of these outputs may then be supplied to a separate processor."

As stated in column 4, lines 48-54, the advantage to supplying parallel outputs from the imaging array is that multiple low cost, low performance processors may be used in place of a single high cost, high performance processor. For this reason, it would have been obvious at the time of invention to have McCubrey's image processing system obtain image data from a camera using Tromborg's image sensor.

McCubrey and Tromborg are silent with regard to placing the output pipelines and the duplicating means on the image sensor.

Tandon discloses an architecture for an image sensor array. As shown in Figure 1, the processing circuitry for the image signals is located on the same chip as the sensor itself. As stated in column 1, lines 10-27, advantages of placing supporting circuitry on the same chip as an image sensor include reduced costs and reduced complexity of assembly. For these reasons, it would have been obvious at the time of invention to have the systems described by McCubrey and Tromborg place all supporting circuitry on the chip with the image sensor.

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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (703) 305-1819 or (571) 272-7321 beginning March 1, 2005. The examiner can normally be reached Monday through Friday from 8:30 A.M. to 6:00 P.M. eastern standard time, alternating Fridays off.

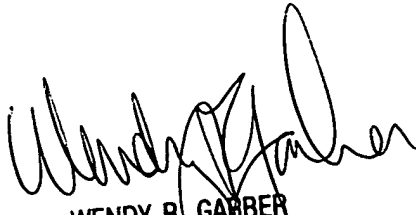
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber, can be reached at (703) 305-4929. The fax phone number for the organization where this application is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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February 13, 2005


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